

## OBJECT DETECTION WITH VOICE OUTPUT

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### Abstract

People suffer regular and constant challenges in Navigation especially when they are on their own. They are mostly dependent on someone for even for accessing their basic day-to-day needs. So, it's a quite challenging task and the technological solution for them is of utmost importance and much needed. One such try from our side is that we came up with an “**OBJECT DETECTION WITH VOICE OUTPUT**” which allows the Blind Victims to identify and classify Real Time Based Common Day-to-day Objects and generate voice feedbacks It's not easy or we can say it's not possible to identify the objects for blind people without touching or sensing the object. And in this pandemic situation it is danger to touch the objects. So, we made a glove which can detect an object by using object detection which refers to the capability of computer and software Blind systems to locate objects in an image and identify each object. Object detection has been also widely used for face detection, vehicle detection, pedestrian counting, web images, security systems and driverless cars etc.... and by using the audio sensor it will pronounce the name of the object nearby them without touching the object. The gloves can detect the live images around the user and it will scan those images by using webcam.

### 1. INTRODUCTION

Object detection is the identification of an object in the image along with its localisation and classification. It has wide spread applications and is a critical component for vision-based software systems. This paper seeks to perform a rigorous survey of modern object detection algorithms that use deep learning. As part of the survey, the topics explored include various algorithms, quality metrics,

speed/size trade-offs and training methodologies. Techniques to construct detectors that are portable and fast on low powered devices are also addressed by exploring new lightweight convolutional base architectures. Ultimately, a rigorous review of the strengths and weaknesses of each detector leads us to the present state of the art. In recent years computer vision technologies have been developed which are very accurate and give promising result

presents real-time object detection system using a CNN in order to recognize objects. In this project, we explored the possibility of using the hearing sense to understand visual objects. The sense of sight and hearing sense share a striking similarity. We built a real-time object detection with a voice feedback system. An object detection with voice output is a device that helps the blind people to make aware about the things in the surroundings. This device is made of a simple glove with a webcam which is easy to detect the objects or live things around the surroundings of the user and the device gives voice feedback to the user so that the user will be able to know what's there in their surrounding and also by the real time-based camera can help them to know what's near them by scanning the things. By using this device blind people don't need any other person help, they don't need to depend on others, they can live independently. And also, this device keeps the user safe in this pandemic period and also helps the user to protect from electrical appliances.

## **2. RELATED WORK**

This literature studies that various technologies they are implemented the object detection for the finding the object of real-world. In basically all the object detection are made in different ways were vibrations and buzzer sounds, but now the implementation in this voice output now

the new programming technologies and all technologies are implemented. Raspberry pi is controller is used by the python program. The detection is a start with the field of Computer Vision that detects instances of semantic objects in images/videos (by creating bounding boxes around them in our case). We can then convert the annotated text into voice responses and give the basic positions of the objects in the person/camera's view. Due to object detection's close relationship with video analysis and image understanding, it has attracted much research attention in recent years. With the rapid development in deep learning, more powerful tools, which are able to learn semantic, high-level, deeper features, are introduced to address the problems existing in traditional architectures. These models behave differently in network architecture, training strategy, and optimization function. Finally, several promising directions and tasks are provided to serve as guidelines for future work in both object detection and relevant neural network-based learning systems.

## **3. IMPLEMENTATION**

It's difficult for the blind people to identify the objects around them without touching or sensing the object. Due to increase in pandemic situation, it's not safe to touch the objects. So, to avoid the contact there should be a which can identify the object

without touching it. Our aim is to build a glove to detect the objects along with their names, to help the blind people without depending on others. This device keeps the people safe in this pandemic period. It also helps them to protect the user from electrical appliances.

Objects required are:

1. Raspberry pi
2. Web camera
3. Speaker
4. Head phones
5. USB cable
6. SD/Memory Card

The process of object detection starts first we have to insert a code in the SD card & then we have to connect the WIFI to system and raspberry-pi then we have to find the IP address of raspberry-pi for that we have to install the Advanced IP scanner. It's the IP address of all devices like: -system, raspberry pi and connected Wi-Fi. Then next step we have to copy that pi IP address into the VNC viewer then we can get the screen of the raspberry pi and in that we have to open the terminal and then we have to run the three statements commands in that terminal shell.

That three commands are: -

- `cd tflite1`
- `source tflite1-env/bin/activate`
- `python3 TFLite_detection_webcam.py --model=Sample_TFLite_model`

Then after completion of those three commands running then web cam starts the detecting the object.

For all this process we must have a raspberry pi for the internal process.

➤ The first command is used for the purpose of imports inserted test file names like: - car, bus, person etc.

➤ The second command is used for the purpose of the activating the `!stt` textfile packages of that environment in source code.

➤ The third command is used for the purpose of the run that source code & then starts the detecting the objects and gives the out voice.

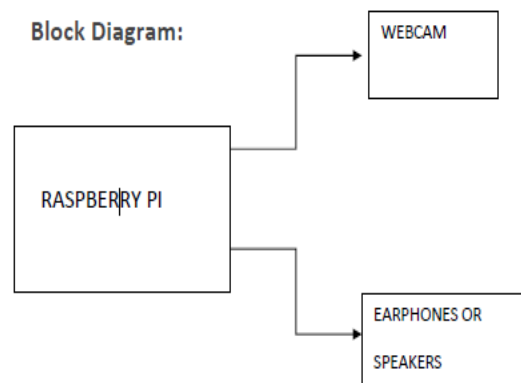
These all three steps are done in within seconds for the web cam we need B-type use cable to connecting the pi to system. the object by the CV2(camera video) then when its detection of the object completes then it gives the out voice about that object name.

In raspberry pi the IP address is fixed and this model is B+ and this is final revision. When the object gets detected that detecting process is done within seconds and it set the instructions in sequence and that are processed fast & that send the instructions to every end-to-end it checks the flow of the detection. After the detection of the one object, it takes the sometime for the detection for another

object detection & this continue and it detect the given class of objects.

#### 4. EXPERIMENTAL RESULTS

In this device we are going to use speaker, webcam and raspberry pi of configuration B+ along with an SD card, which will store the device running code. We should connect the speaker to the raspberry pi at output pin instead of speakers we can also use the head phones and connect the webcam to the 5v pin which is used for scanning the objects. This design works when we insert the required code in SD card and insert that SD card into raspberry pi. Then we should give instructions or command to activate the raspberry pi to get an IP address by using advanced IP scanner. After getting the IP address of the raspberry pi we should scan that IP address and copy it in the VNC viewer, then an application will open with a terminal. In this terminal we should run the code of the device or we can copy that code into the SD card. After this process the code starts running then the scanner will automatically scan the object and gives the voice Feedback using the speaker.



#### 5. CONCLUSION

Object detection with voice output device plays a significant role in improving and

manufacturing tasks such as to get an idea about what is present near the user, identifying the objects without touching the objects and quality control. Object Detection is a powerful, cutting-edge computer vision technology that localizes and identifies objects in an image. Object detection tools and technologies from labelling images, to augmenting images, to training object models, to deploy object detection models for inference. AI contributes to productivity by helping manufacturers with predictive maintenance and plant automation.

Object detection with voice output helps the blind people to make aware about the things in the surroundings. This device is made of a simple glove with a webcam which is easy to detect the objects or live things around the surroundings of the user and the device gives voice feed back to the user so that the user will be able to know what's there in their surrounding and also by the real time-based camera can help them to know what's near them by scanning the things.

By using this device, blind people will be independent, they don't need other people to guide them. The user will know where the things are present. So, that he can manage his moves and without touching the objects and he can identify where the things are placed in the surroundings.

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